6.0 DOE LOS ALAMOS AREA OFFICE TRACT

6.1 Affected Environment

6.1.1 Land Use

The DOE Los Alamos Area Office (LAAO) Tract consists of approximately 15 acres (6 hectares) and is located within the Los Alamos townsite between Los Alamos Canyon and Trinity Drive. The tract is bound to the north and northwest by single- and multiple-family residential areas and professional services offices facing onto Trinity Drive. The tract is bound to the south, east, and west by the edge of Los Alamos Canyon at the border with Technical Area (TA) 43 (see Figure 6.1.1-1, DOE LAAO Tract Layout). A paved road extending from Trinity Drive provides access into the site (DOE 1998b).

The tract contains a three-story administrative office building, associated parking, and an abandoned steam plant. Potentially sensitive wildlife habitat and structures that may be of historic significance are present at the site (DOE 1998b).

Land use at the tract has been dominated recently by the administrative activities of the DOE. Adjacent land to the north and northwest has residential and professional office uses. To the south, east, and west, land use is for buffer zones related to LANL operations.

The Los Alamos Bench Trail trends southwest to northeast across the northwest edge of the tract (see Figure 3.2.1-2 in Chapter 3). The extent and variety of recreational activities at and in proximity to the tract are limited by adjacent land use.

Figure 6.1.1-2 shows the monitoring facilities or outfall structures located near the subject land tract.

6.1.1.1 Environmental Restoration

The DOE LAAO Tract contains three potential release sites (PRSs), two DOE-owned structures, and no canyon systems. Two of the three PRSs are associated with the operation of the steam plant and are categorized as one surface and one subsurface unit. The third PRS is a sanitary septic system and is categorized as an outfall. The structures

6.0 DOE LOS ALAMOS AREA OFFICE TRACT

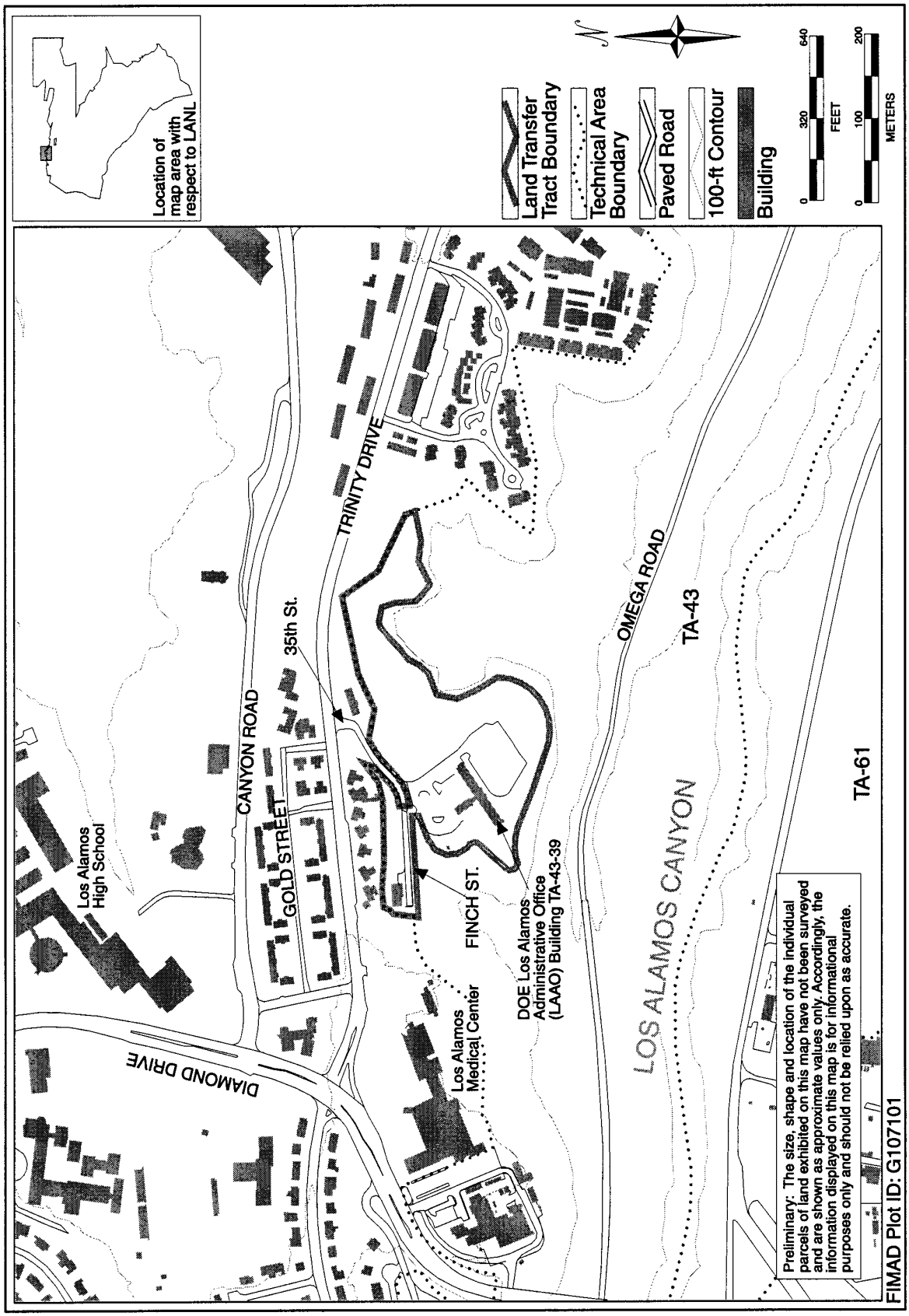

Figure 6.1.1-1. DOE Los Alamos Area Office Tract Layout.

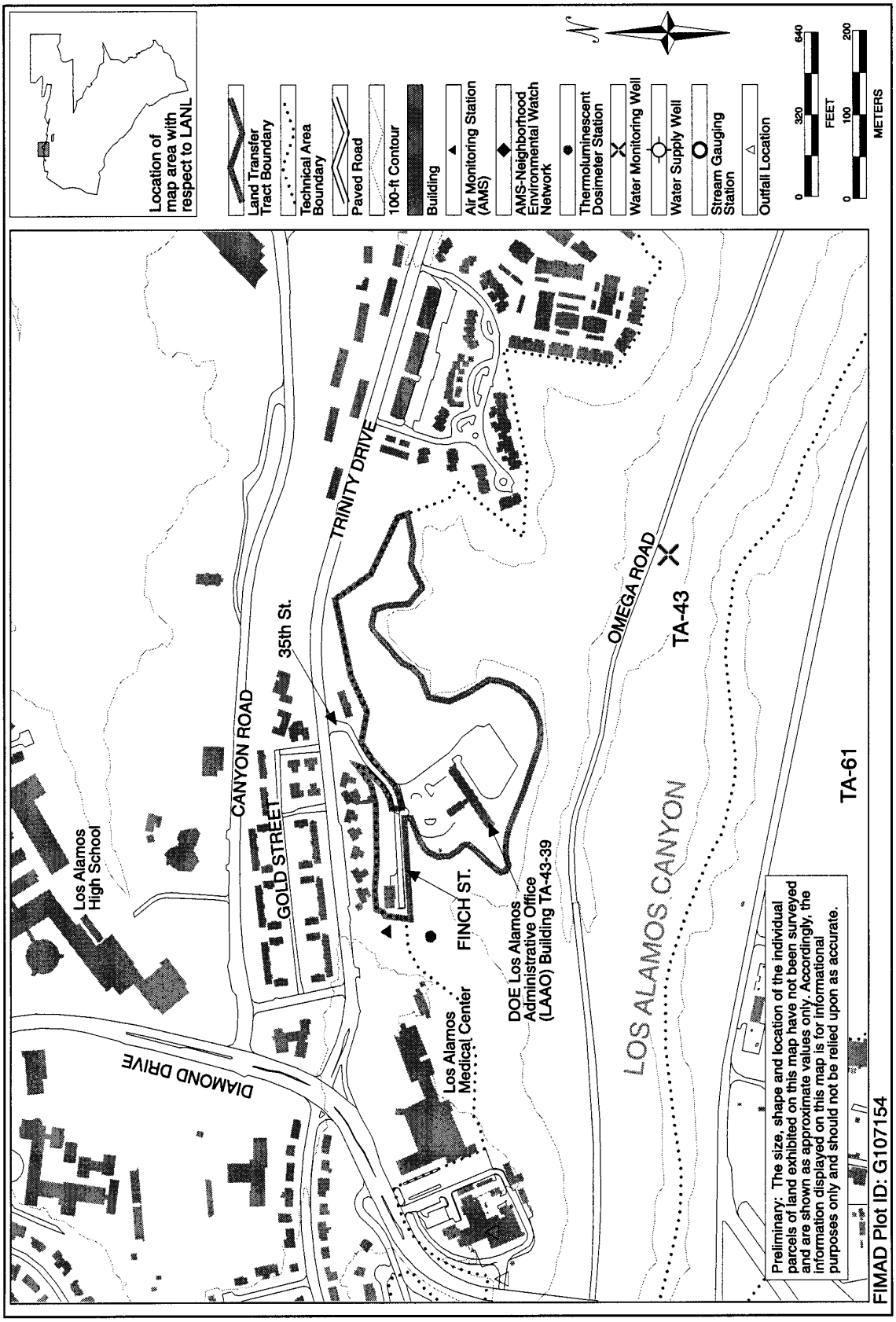

Figure 6.1.1-2. DOE Los Alamos Area Office Tract Monitoring Stations and Outfall Locations.

are the DOE office building and the former steam plant. Sampling of the three PRSs reveals the presence of organic chemicals. There are no other environmental restoration or decommissioning concerns at the tract. Figure 6.1.1.1-1 shows areas with potential contamination issues (PCIs) within this tract, as well as areas with no known contamination. PCI acreage is estimated to total only 2.3 acres (0.9 hectare).

6.1.2 Transportation

This site has access to Trinity Drive via 35th Street, a two-lane street (see Figure 6.1.1-1). 35th Street is essentially an entrance to the site, and due to topography, will likely remain so. Trinity Drive is a four-lane major road near this site that has an approximate capacity of 7,200 passenger cars per hour (pcph). Data provided by the County of Los Alamos show that Trinity Drive carried approximately 2,630 vehicles in the vicinity of 35th Street during the peak hour in January 1998. The average annual daily traffic for Diamond Drive near the site is approximately 19,700 vehicles per day. This results in a level of service (LOS) C for Trinity Drive for the current traffic volumes, which is defined as good operating conditions with stable flow, but speeds and maneuverability are more closely controlled by the higher traffic volumes. Increasing Trinity Drive traffic by 1.5 percent a year to account for expected growth in the general area over the next 20 years maintains the LOS C for Trinity Drive.

6.1.3 Infrastructure

Figure 6.1.3-1 shows the locations of utility lines, roads, and structures on the DOE LAAO Tract. The tract includes two buildings: a two-story building that currently houses DOE LAAO and a smaller abandoned steam plant currently used for general storage. The site is accessed via a residential-sized road (35th Street) from Trinity Drive. All but the eastern part of the tract is accessible by road.

All utilities, including water, gas, electricity, sewage, and steam are available to this site. Electrical power enters the site from the west along the edge of the mesa above Los Alamos Canyon. Water is supplied by lines entering the site near the west end of the tract. This tract is not metered separately for any utilities, and no figures for current utility usage are available. A sewage lift station is present on the tract to the west of the LAAO Building.

6.1.4 Noise

The DOE LAAO Tract has Los Alamos Canyon to the immediate south and Diamond Drive to the immediate north. Private residences bound the tract on both the east and the west. Activities involve the approximately 120 individuals who work in the building, plus visitors. Daytime noise levels, primarily determined by traffic on nearby Trinity Drive and the bridge over Los Alamos Canyon, are an estimated 40 to 50 decibels (dB). Several thousand vehicles per hour can pass along these thoroughfares during busy times of the day.

6.1.5 Visual Resources

The LAAO Building (TA-43-39) and associated parking lots and roads dominate views within the developed areas of the DOE LAAO Tract. Views of the developed area are somewhat obscured from Trinity Drive due to the curved entry road, the lower elevation of the developed portion of the tract, and the vegetation. Undeveloped, forested areas located mainly around the perimeter and between the LAAO Building and Trinity Drive can be viewed from locations in the building and the parking lots. This tract was analyzed by assigning two rating units to the tract based on the visual character of the developed and undeveloped portions of the

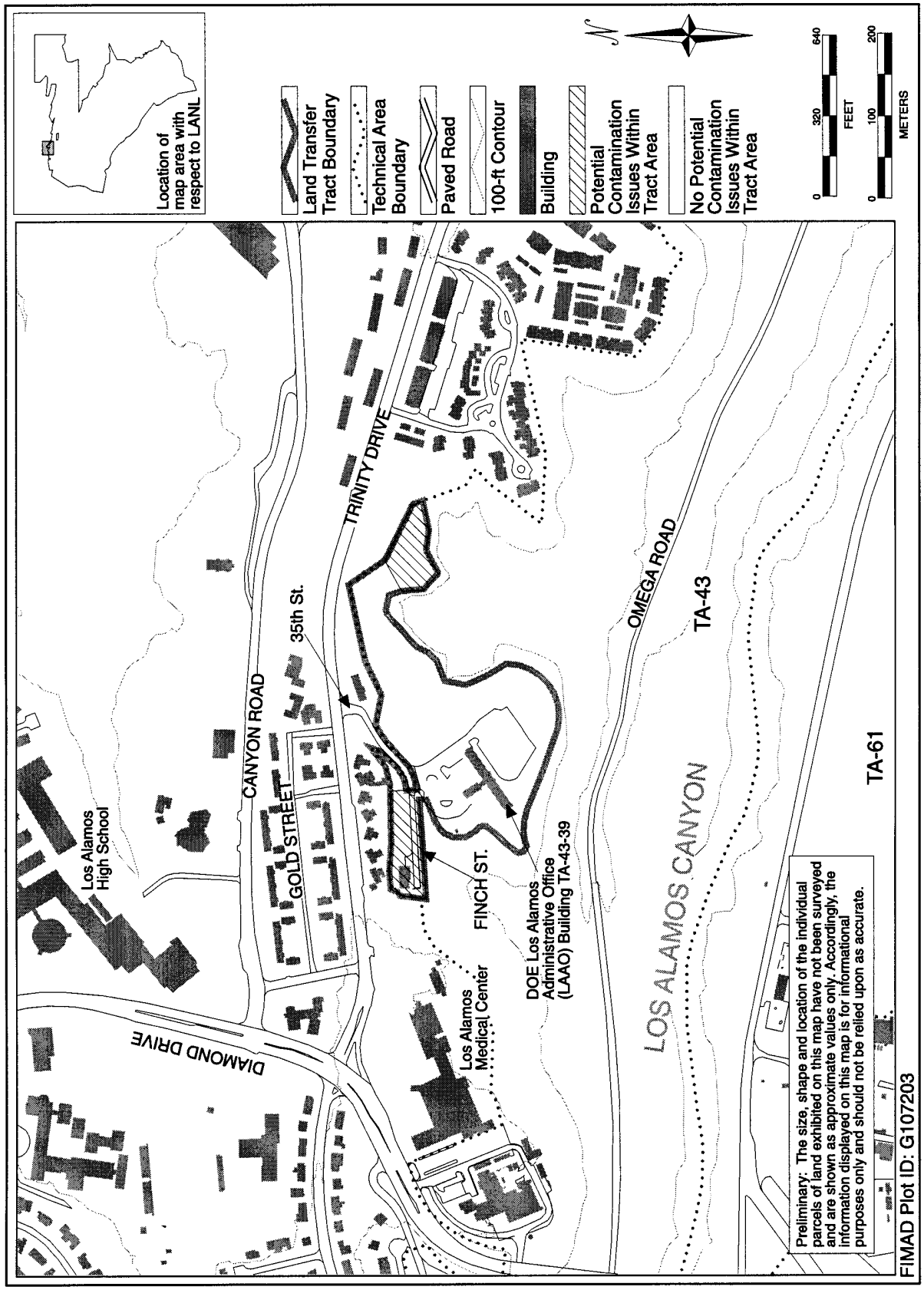

Figure 6.1.1.1-1. DOE Los Alamos Area Office Tract Potential Contamination Issue Areas.

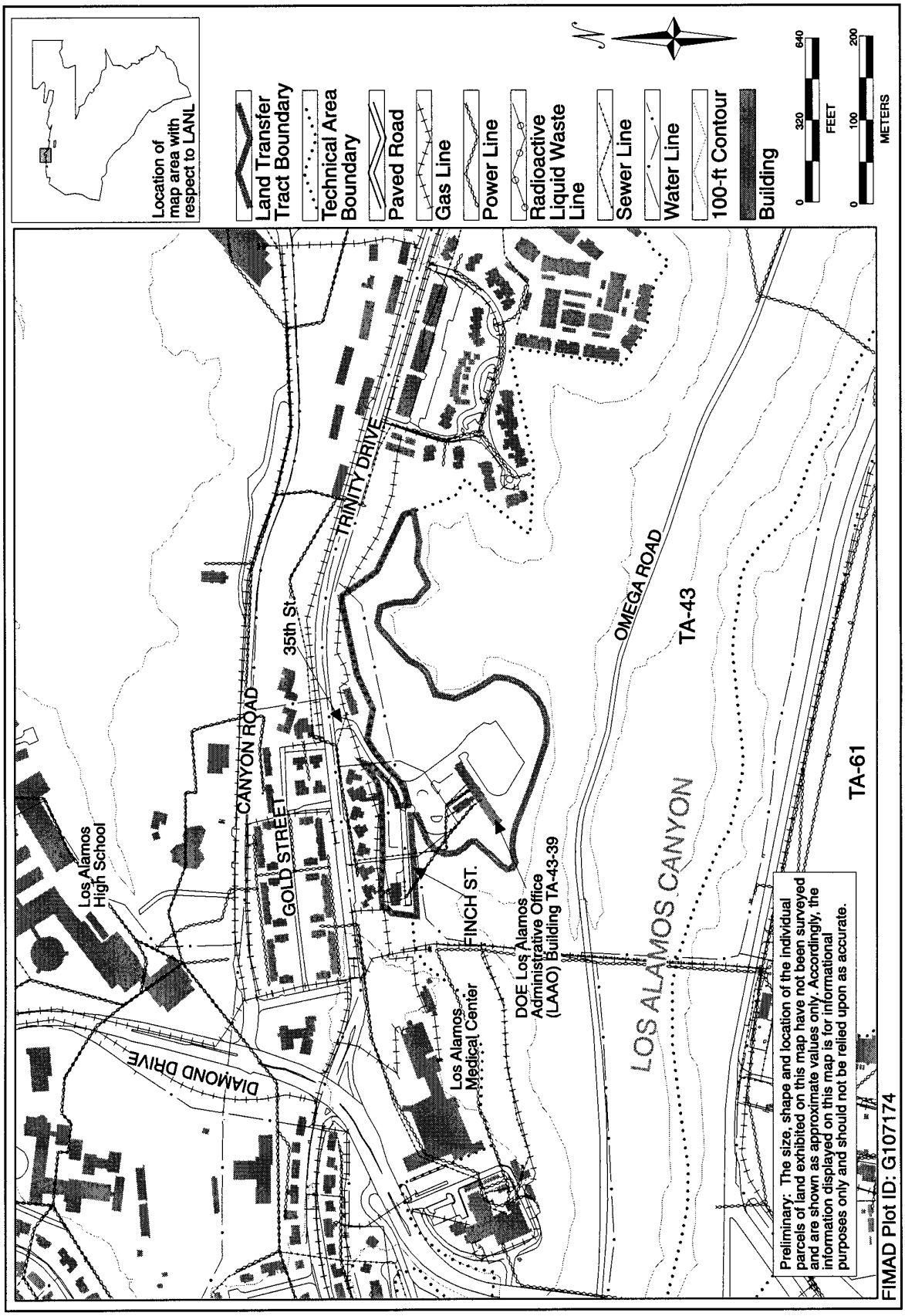

Figure 6.1.3-1. DOE Los Alamos Area Office Tract Utilities and Infrastructure.

site. The developed area was designated as Rating Unit 1. The undeveloped areas were designated as Rating Unit 2.

Three components were analyzed for each of the two rating units: scenic quality, distance zone, and sensitivity level.

After these components were combined using the Inventory Class Matrix, it was determined that the developed portions of the site are assigned to Scenic Class IV, low public value for the visual resources, and the undeveloped portions of the site are Scenic Class III, moderate public value for the visual resources.

6.1.6 Socioeconomics

The most meaningful economic region of influence (ROI) for all of the tracts is the regional setting described in Chapter 3 of this CT EIS. Labor and housing markets extend well beyond any of the subject tract boundaries.

Existing development on this tract includes the LAAO Building and an abandoned steam plant. Employment is limited to the DOE administrative functions located in the LAAO Building. About 170 people are employed at the site by the DOE.

6.1.7 Ecological Resources

An estimated 35 percent of the DOE LAAO Tract is either roadway, parking lots, building, or artificially maintained landscape. The remaining area is primarily ponderosa pine forest. There are no identified streams, wetlands, or floodplains present within the tract. However, floodplains, surface water, and wetlands are present at the floor of the adjacent Los Alamos Canyon. Flora and fauna in the undeveloped portions of the tract are characteristic of the region. The site contains suitable foraging habitat and is within the Los Alamos Canyon area of environmental interest (AEI) for the Mexican spotted owl and the Pueblo Canyon AEI for the American peregrine falcon (PC 1999d). Because the tract contains DOE LAAO, and because of its location within the Los Alamos townsite, the area is active with personnel entering and leaving the facility, lunch time picnickers, and general recreation walkers. Road noise is evident from passenger vehicles and a variety of light and heavy delivery trucks within the site and from vehicle traffic on Trinity Drive. Lighting sources in the tract include security lighting and lighting from residential and commercial developments.

6.1.8 Cultural Resources

The DOE LAAO Tract was used during the Cold War era. The ROI for this tract includes the land tract itself, plus nearby cultural resources located off the tract. For this tract, these nearby resources are located on LANL and privately held lands.

One hundred percent of the DOE LAAO Tract has been inventoried for historic and prehistoric cultural resources. There are no prehistoric cultural sites recorded within the tract. Two Cold War era structures are present within the DOE LAAO Tract and have been evaluated as potentially eligible for the National Register of Historic Places (NRHP). There is a potential for unidentified resources, including subsurface archaeological deposits and unrecorded burials.

There are no known traditional cultural properties (TCPs) located within the DOE LAAO Tract. Consultations to identify TCP resources have not been conducted, but it is unlikely that resources are present due to past development.

Additional information on the cultural resources of the DOE LAAO Tract is presented in Appendix E of this CT EIS.

6.1.9 Geology and Soils

The DOE LAAO Tract occupies a portion of TA 43 off of Trinity Drive and along the edge of Los Alamos Canyon. Although the site is heavily developed with the DOE LAAO offices and parking lot, it is typified by the Pogna fine sandy loam soil type and steep rock outcrops along the canyon rim. Outcrops are the upper member of the Bandelier Tuff (Tshirege), typical of the Pajarito Plateau. No major surface faulting is evident in TA 43.

6.1.10 Water Resources

The DOE LAAO Tract is located on the mesa top above Los Alamos Canyon, which is an ephemeral drainage in the vicinity of the tract. There are no known springs within the tract nor any known wetlands. There are no National Pollutant Discharge Elimination System (NPDES)-permitted outfalls within the tract. There are no regional aquifer groundwater test or supply wells within the tract or within a distance of 0.5 miles (0.8 kilometers).

There are no stream gages or established surface water or groundwater monitoring stations located within the DOE LAAO Tract. The closest environmental monitoring locations maintained by the LANL Environmental Surveillance and Compliance Program are for surface water and shallow groundwater in Los Alamos Canyon and do not pertain to water quality or quantity associated with this tract.

The DOE LAAO Tract does not lie within the 100-year or 500-year floodplains as modeled by LANL for Los Alamos Canyon.

6.1.11 Air Resources

Air quality at the DOE LAAO Tract is good, affected mostly by traffic on nearby Trinity Drive; several thousand vehicles per hour can pass along this thoroughfare during busy times of the day. Air quality is also affected, to a lesser extent, by emissions from the nearby Human Resources Laboratory (HRL) and LANL as a whole.

The DOE LAAO Tract is part of New Mexico Region 3, an attainment area that meets National Ambient Air Quality Standards (NAAQS) for criteria pollutants. Except for small amounts of carbon monoxide and ozone resulting from hydrocarbons emitted from motor vehicles, there are no sources of criteria pollutants within the tract itself.

The office activities at the DOE LAAO Tract result in no emissions of hazardous and other chemical pollutants, so that concentrations of these chemicals at the tract are the result of other LANL activities. Emissions from the HRL mostly affect the tract. However, analyses performed for the LANL SWEIS (DOE 1999c) estimate that risk from concentrations of any chemical air pollutant does not exceed health-based standards of one million excess latent cancer fatalities (LCFs) for any point beyond the LANL boundary, including the Los Alamos Medical Center. Because the DOE LAAO Tract is about 900 feet (275 meters) more distant from HRL than the Medical Center is, it can be concluded that concentrations of chemical pollutants at the tract also are likely to be below health-based standards.

Finally, analyses for doses from radioactive air pollutants indicate that air concentrations at the DOE LAAO Tract would deliver a dose of approximately 1.0 millirem per year to people residing there year-round, or about 10 percent of the EPA standard (DOE 1999c). There are no emissions of radioactive air pollutants from activities at the tract itself.

6.1.11.1 Global Climate Change

There are two sources of greenhouse gas emissions from activities on the DOE LAAO Tract: (1) water and space heating needs of the DOE LAAO office building and (2) motor vehicle use. Carbon dioxide emissions from

these sources are estimated to be approximately 130 tons (120 metric tons) per year.

6.1.12 Human Health

6.1.12.1 The Radiological Environment for the DOE LAAO Tract

There are no activities or operations at the DOE LAAO Tract that involve radioactive materials, but personnel on the tract do receive radiation doses as a result of other LANL operations. Because the DOE LAAO Tract is several miles west of the location of LANL's offsite maximally exposed individual (MEI), which has historically been located near the Small Business Center Annex (on East Gate Drive), the doses are lower at this tract than at other tracts proposed for transfer. For example, the LANL SWEIS projects doses to the public of 3.1 millirem at the Annex, from 1.4 to 2.0 millirem for TA 21, and approximately 1.0 millirem for the DOE LAAO Tract (DOE 1999c, Chapter 5). These can be compared to the EPA allowable exposure limit of 10 millirem per year.

Background radiation received at the DOE LAAO Tract is the same as that for any location within the Los Alamos townsite—an effective dose equivalent (EDE) of 360 millirem to any individual, plus an average of 53 millirem for medical and dental x-rays and procedures.

The DOE LAAO Tract lies within the edge of one of LANL's one-half mile radiation site evaluation circles (see Figure 6.1.12.1-1), which were included in LANL's 1990 Site Development Plan (LANL 1990). These circles were intended to be used as planning tools for site developers and other project managers responsible for siting new facilities or operations to inform them of the presence of existing radiation sources and the need to evaluate their proposed action(s) against this information. The circles are not representative of a particular dose of radiation to the DOE LAAO Tract under either normal or accident conditions, and are noted herein for the purposes of disclosure with regard to the nearest radiation source location relative to the tract. The quantities of radioactive material and other sources of radiation identified by these radiation evaluation circles were evaluated in the 1999 LANL SWEIS, as already discussed.

6.1.12.2 The Nonradiological Environment for the DOE LAAO Tract

Exposures to nonradiological contaminants from LANL operations via the airborne pathway in the LANL vicinity have already been shown not to be significant for the affected environment (DOE 1999c). PRSs for this tract are not located where visitors would be in proximity to the contaminants. Prior to their remediation, no nonradiological emission sources exist on this tract other than those associated with building infrastructure (such as, lead paint and asbestos) and mobile sources due to vehicular traffic.

While flooding from the 100- and 500-year floods may have little effect on this tract, seismic events and wildfires could have catastrophic impacts to the land tract. Human health impacts to people other than workers would be restricted to visitors. No known hazardous materials are present on this tract that could pose a risk during a natural disaster.

6.1.12.3 Facility Accidents

Chemical Accidents

The LANL SWEIS posits six chemical accidents, and 16 different accident scenarios, as discussed in Chapter 4, Section 4.1.12, of this CT EIS. For all but one of the scenarios, chemical concentrations in the air plume released by the potential accidents would be below both Emergency Response Planning Guideline (ERPG)-3 (life-threatening) and ERPG-2 (serious health effects) by the time

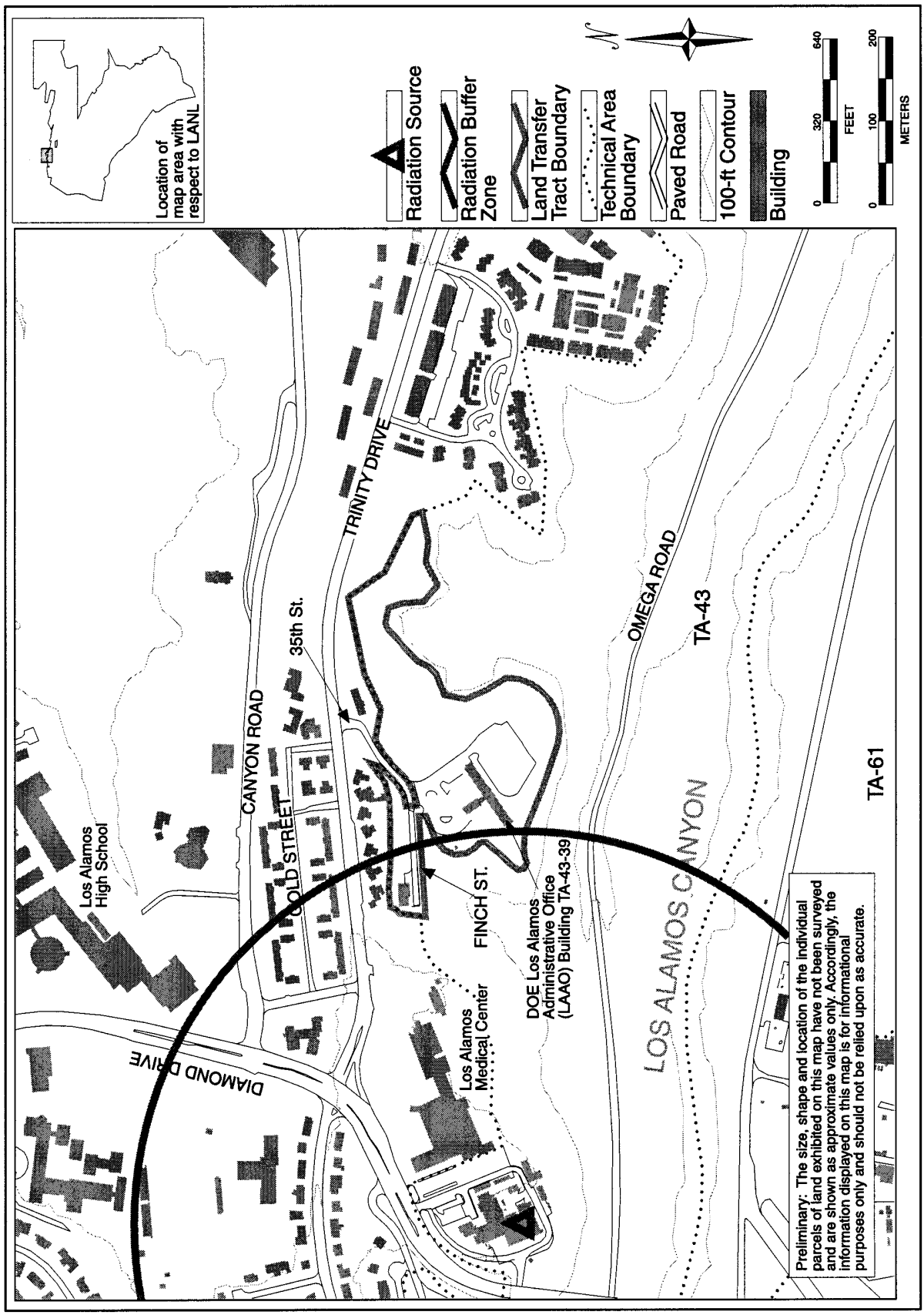

Figure 6.1.12.1-1. DOE Los Alamos Area Office Tract Radiation Site Evaluation Circle.

the air plume reached the DOE LAAO Tract, even under adverse weather dispersion conditions. Accordingly, chemical accidents have no estimated public consequences at the tract for 15 of the accident scenarios.

The lone scenario in which the chemical plume reached the DOE LAAO Tract is the hypothetical rupture of a chlorine cylinder, during adverse weather dispersion conditions, at the chlorinating station along Diamond Drive in the Los Alamos townsite (Building 00-1109). This scenario has an estimated frequency of 3×10^{-5} per year, or once every 330,000 years. Under this scenario, ERPG-3 concentrations are estimated to extend a distance of 1,345 feet (410 meters), and ERPG-2 concentrations a distance of 4,790 feet (1,460 meters). The DOE LAAO Tract is 3,280 feet (1,000 meters) from the accident location and would thus experience ERPG-2 concentrations. The tract is occupied by about 120 DOE employees. Accordingly, no public consequences would result.

Radiological Accidents

There are 13 credible radiological accident scenarios postulated in the LANL SWEIS, as discussed in Chapter 4, Section 4.1.12. Using data from the LANL SWEIS, doses to the MEI at the DOE LAAO Tract have been estimated for each of these, as shown in Table 6.1.12.3-1.

Accident scenarios result in estimated tract collective doses of 4,400 person-rem for RAD-02, 850 person-rem for RAD-12, 260 person-rem for RAD-15B, and less than 15 person-rem for any other accident. Excess LCF estimates are 2, 0.4, and 0.1 for accidents RAD-02, RAD-12, and RAD-15B, respectively.

Natural Event Accidents

There are five natural event accident scenarios postulated in the LANL SWEIS: four earthquakes and one wildfire. The most severe postulated earthquake (accident SITE-03B) has an estimated frequency of 3×10^{-5} per year, or once every 330,000 years. The earthquake would release chemicals from a number of facilities, including formaldehyde from the HRL (Building 43-01) and chlorine from the chlorinating station within the Los Alamos townsite (Building 00-1109). As discussed above for chemical accidents, earthquakes would have no estimated public consequences at the DOE LAAO Tract, although DOE employees would be exposed to ERPG-2 concentrations of chlorine. The most severe postulated earthquake, however, would release significant quantities of radioactive materials from several buildings, especially from the Chemistry and Metallurgy Research (CMR) Building (Building 03-29). Radiological consequences are estimated to result in a maximum dose of nearly 300 Roentgen equivalent man (rem) at the DOE LAAO Tract.

The postulated site wildfire scenario would burn about 8,000 acres (3,238 hectares) within LANL boundaries, or about 30 percent of LANL, including most of Mortandad Canyon and parts of Los Alamos and DP Canyons east of TA 21. Chemical releases would be less severe than in the earthquake scenarios. The largest quantities of radioactive materials would be released from the transuranic (TRU) waste storage domes at Area G. The maximum dose at the DOE LAAO Tract is estimated to be less than 0.1 rem. Such a wildfire has an estimated frequency of 0.1 per year, or once every 10 years.

The maximum earthquake scenario would result in a significant tract collective dose to DOE employees and as many as five excess LCFs.

6.1.13 Environmental Justice

Any disproportionately high and adverse human health or environmental effects on minority or low-income populations that

Table 6.1.12.3-1. MEI Doses for the DOE LAAO Tract Resulting from Hypothetical Accidents at LANL Facilities

ACCIDENT SCENARIO	ACCIDENT LOCATION	FACILITY	FREQUENCY PER YEAR	MEI DOSE (mrem)	ACCIDENT DESCRIPTION
RAD-01	54-38	RANT	1.6×10^{-2}	38	Fire in the outdoor container storage area
RAD-02	03-29	CMR	1.5×10^{-6}	97,000	Natural gas pipeline failure
RAD-03	18-116	Kiva #3	4.3×10^{-6}	27	Power excursion at the Godiva-IV fast-burst reactor
RAD-05	21-209	TSTA	9.1×10^{-6}	1	Aircraft crash
RAD-07	50-69	WCRR	3.0×10^{-4}	210	Fire in the outdoor container storage area
RAD-08	54-230	TWISP	4.3×10^{-6}	45	Aircraft crash
RAD-09A	54-226	TWISP	4.9×10^{-1}	1	Puncture or drop of average-content drum of transuranic waste
RAD-09B	54-226	TWISP	4.9×10^{-3}	28	Puncture or drop of high-content drum of transuranic waste
RAD-12	16-411	--	1.5×10^{-6}	17,000	Seismic-initiated explosion of a plutonium-containing assembly
RAD-13	18-116	Kiva #3	1.6×10^{-5}	41	Plutonium release from irradiation experiment at the Skua reactor
RAD-15A	03-29	CMR	3.6×10^{-5}	270	Fire in single laboratory
RAD-15B	03-29	CMR	3.2×10^{-5}	5,200	Fire in entire building wing
RAD-16	03-29	CMR	3.5×10^{-6}	15	Aircraft crash

Notes: mrem = millirem; RANT = Radioactive Assay and Nondestructive Test; CMR = Chemistry and Metallurgy Research; TSTA = Tritium Systems Test Assembly; WCRR = Waste Characterization, Reduction, and Repackaging; TWISP = Transuranic Waste Inspectable Storage Project

could result from the actions undertaken by the DOE are assessed for the 50-mile (80-kilometer) area surrounding LANL, as described in Chapter 3, Section 3.2.1.14.

6.2 No Action Alternative

6.2.1 Land Use

There would be no anticipated changes to land use at the DOE LAAO Tract as described under the No Action Alternative. Adjacent TA 43 lands would continue to serve as a buffer zone to LANL operations. Similarly, no change in access to the tract would be anticipated to occur.

6.2.1.1 Environmental Restoration

Characterization and cleanup of this tract would take place as described in DOE's *Accelerating Cleanup: Paths to Closure* (DOE 1998c) or similar plans. The plan focuses on completing work at as many contaminated sites as possible by the end of fiscal year 2006, although some LANL sites may take longer. The plan includes input from all major field sites, including LANL.

The DOE has developed preliminary information based on current knowledge of contamination at the DOE LAAO Tract, as briefly discussed in the Affected Environment portion of this chapter, Section 6.1.1.1. Information includes estimates of sampling and cleanup costs, decommissioning costs, types and volumes of wastes that would be generated, and length of time required to effect the cleanup. An overview of this preliminary information is set forth in Appendix B of this CT EIS. All information has been extracted from the Environmental Restoration Report (DOE 1999b).

This information indicates that a range of possible remedies are likely for the tract. While removal actions are likely for all three PRSs, the number of structures razed could differ. Cleanup duration could last up to 18 months for the longest segment. (Multiple sites can be restored simultaneously, so that cleanup duration is determined by the site that requires the most time.) Waste volumes are projected to range from approximately 400 to 3,400 cubic yards (305 to 2,600 cubic meters). Cost estimates for remedial action at this parcel range from about $4,253,000 to $9,680,000. These estimates are based on the information currently available for each PRS or structure, and are subject to change if significantly different information is discovered during the course of investigation or remediation. It should be noted that all PRSs, including those at which no remediation is ultimately required, must be characterized, and the results must be reported to the administrative authority. As a consequence, there are almost always costs and wastes associated with PRSs that do not require actual "cleanup." Although different cleanup approaches have been identified for the two contemplated land uses, it is possible that the administrative authority could require even more restoration, resulting in greater waste volumes, longer cleanup duration and associated risks to remediation workers, and higher costs. It also should be noted that environmental restoration actions and costs represent only a portion of the actions and total costs that may be required for conveyance and transfer of this parcel. These additional costs may be significant.

6.2.2 Transportation

The No Action Alternative would result in no significant changes in traffic volume on 35th Street or Trinity Drive near the DOE LAAO Tract. It is expected that the future operational performance of 35th Street or Trinity Drive would remain similar to that of the current performance, assuming that the future level of development in the area of the site is 1.5 percent, as predicted by the U.S. Census Bureau.

6.2.3 Infrastructure

The No Action Alternative would result in no substantial changes in the infrastructure or utilities of the DOE LAAO Tract. Operations would continue at DOE LAAO. No appreciable increase in utility usage is expected.

6.2.4 Noise

In the No Action Alternative, the DOE LAAO Tract would continue to be used for an office building. Occupancy would be expected to rise from the current 120 employees but by less than 10 percent. This increase parallels the 20 percent increase in LANL employment from today's levels to levels assumed for the LANL SWEIS Expanded Operations Alternative (DOE 1999c, Chapter 5, Table 5.3.9.1-1). Accordingly, the dominant source of ambient noise would continue to be traffic along Trinity Drive and traffic crossing the Los Alamos Canyon Bridge. Noise levels would be expected to remain about the same, typically 40 to 50 A-weighted decibels (dBA).

6.2.5 Visual Resources

Under the No Action Alternative, it would be expected that the existing visual character of the tract would remain unchanged. The buildings and parking areas would remain somewhat obscured from view from Trinity Drive by the forested areas of the tract.

6.2.6 Socioeconomics

Under the No Action Alternative, there would be no anticipated changes in land use or change in employment on the tract. The administrative offices would remain on the tract.

6.2.7 Ecological Resources

Under the No Action Alternative, there would be no changes in land use at the DOE LAAO Tract, as described in Section 6.1.1. Therefore, no adverse impact to ecological resources would be projected under the CT EIS No Action Alternative.

6.2.8 Cultural Resources

Under the No Action Alternative, the DOE LAAO Tract would remain the responsibility of the DOE and the treatment of any cultural resources would continue to be subject to Federal laws, regulations, guidelines, executive orders, and Pueblo Accords. The use of the DOE LAAO Building, a potentially eligible resource, would continue, and the building would not be demolished. Other unidentified or undetermined resources would be passively preserved. Ongoing negative impacts from natural processes (such as erosion and aging) on the physical integrity of cultural resources would continue.

6.2.9 Geology and Soils

Under the No Action Alternative, consequences are limited to existing uses. The tract is already developed; no additional utilities, roadwork, or buildings would be required. No soil disturbance or change in availability of resources would be anticipated. Existing structures are vulnerable to wildfire episodes and greater than magnitude 7 seismic events as measured on the Richter scale.

6.2.10 Water Resources

Consequences to water resources under the No Action Alternative would be no different than those already existing in the affected environment.

6.2.11 Air Resources

In the No Action Alternative, the DOE LAAO Tract would continue to be used for an office building. Occupancy would be expected to rise from the current 120 employees but by less than 10 percent. Accordingly, the dominant source of criteria pollutants would continue to be traffic along Trinity Drive. Analyses show that ambient air quality would remain within standards established by EPA and the State of New Mexico for criteria pollutants (DOE 1999c, Chapter 5).

For hazardous and other chemical pollutants, analyses performed for the LANL SWEIS estimate that concentrations of chemical air pollutants would not exceed health-based standards for any point beyond the LANL boundary. The DOE LAAO Tract is near a location where LANL emissions of chemical air pollutants approach guideline values based upon health-based standards. The combined incremental cancer risks from releases of all carcinogenic pollutants are slightly above the guideline value of 1×10^{-6}, or one in one million, at two locations at the Los Alamos Medical Center: 1.17×10^{-6} at an air intake duct and 1.07×10^{-6} at a window (DOE 1999c, Chapter 5). The major contributors to this estimated cancer risk are chloroform, formaldehyde, and trichloroethylene from the HRL, and methylene chloride from multiple sources. Of

these, chloroform alone accounts for more than 87 percent of the total risk. The DOE LAAO Tract is about 900 feet (275 meters) more distant from HRL than the Medical Center is, and combined cancer risk at this location would be estimated to be less than the guideline value of one in one million.

Finally, analyses for doses from radioactive air pollutants indicate that air concentrations at the DOE LAAO Tract from LANL operations would deliver a dose of approximately 2.0 millirem per year to people residing there year-round, or about 20 percent of the EPA standard (DOE 1999c, Chapter 5). There are no emissions of radioactive air pollutants from activities at the tract itself.

6.2.11.1 Global Climate Change

In the No Action Alternative, land use for the DOE LAAO Tract would not change. Small amounts of carbon dioxide would continue to be emitted from vehicles and building heating requirements. Carbon dioxide emissions would be estimated to remain at approximately 130 tons (120 metric tons) per year.

6.2.12 Human Health

There would be no identifiable human health consequences of the No Action Alternative for the DOE LAAO Tract. No changes in cancer risk should be expected for this alternative. Radiation doses received at this tract would be estimated to double from today's levels, to approximately 2.0 millirem per year (DOE 1999c, Chapter 5). No significant nonradiological increases in exposures would be expected. Visitors may have adequate time to evacuate the premises for floods or for wildfires. Because warnings are usually not given for seismic events, the human health impacts due to seismic events likely would be greater than the other two natural disasters. The primary type of human health risk for natural disasters would be physical injury from falling building debris and fires from ruptured gas lines.

6.2.12.1 Chemical Accidents

Accident assessment would be the same as described in the Affected Environment section of this chapter. For 15 of the 16 accident scenarios postulated in the LANL SWEIS, chemical concentrations in the air plume released by potential chemical accidents would be below both ERPG-3 (life-threatening) and ERPG-2 (serious health effects) by the time air plume reached the DOE LAAO Tract, even under adverse weather dispersion conditions. ERPG-2 concentrations would reach the tract under the 16th scenario and would affect DOE employees at the tract. Therefore, under the No Action Alternative, chemical accidents would have no estimated public consequences at the tract, but would affect DOE employees under one accident scenario.

6.2.12.2 Radiological Accidents

Accident assessment would be the same as described in the Affected Environment section of this chapter. MEI doses would be greater than 500 millirem for 3 of 13 scenarios. Estimated tract collective doses would be 4,400 person-rem for RAD-02, 850 person-rem for RAD-12, 260 person-rem for RAD-15B, and less than 15 person-rem for any other accident. Excess LCF estimates would be 2, 0.4, and 0.1 for accidents RAD-02, RAD-12, and RAD-15B, respectively. All doses would be to DOE employees.

6.2.12.3 Natural Event Accidents

Accident assessment would be the same as described for the affected environment. As discussed, earthquakes would have no estimated public consequences at the DOE LAAO Tract, although DOE employees would be exposed to ERPG-2 concentrations of chlorine under adverse weather dispersion

conditions. The postulated wildfire accident scenario would have no chemical consequences at the DOE LAAO Tract. The MEI dose resulting from the postulated wildfire would be less than 0.1 rem. The maximum dose from the most severe earthquake would be about 300 rem, however. The maximum earthquake scenario would result in an estimated dose of 270 rem at the DOE LAAO Tract, a collective dose to DOE employees of 12,000 person-rem and as many as six excess LCFs.

6.2.13 *Environmental Justice*

For environmental justice impacts to occur, there must be high and adverse human health or environmental impacts that disproportionately affect minority or low-income populations. The human health analyses estimate that air emissions and hazardous chemical and radiological releases from normal LANL operations that would continue under the No Action Alternative would be expected to be within regulatory limits and that no excess LCFs would likely result. The human health analyses also indicate that radiological releases from LANL accidents would not result in disproportionate adverse human health or environmental impacts. Therefore, such accidents would not have disproportionately high and adverse impacts on minority or low-income populations.

The analyses also indicate that socioeconomic changes resulting from implementing the No Action Alternative would not lead to environmental justice impacts.

6.3 Proposed Action Alternative

6.3.1 Land Use

Direct consequences of the disposition of this tract would include the relocation of DOE and contractor personnel who currently work at the DOE LAAO, and decontamination and decommissioning of the office building and steam plant as required. Current plans are to relocate employees to a new building in TA 3. Detailed plans and location of the new building have not been developed, but it is likely that removal of some trees would be required at any potential building site. It also is possible that employees would be relocated to existing buildings. Any decision regarding construction of new facilities would be preceded by appropriate NEPA review.

Indirect consequences would be anticipated from the subsequent uses of the tract contemplated by the receiving party or parties. The contemplated uses and the associated consequences are discussed in the following sections.

6.3.1.1 Description of Contemplated Uses

Land use proposed for the DOE LAAO Tract includes residential and commercial development. The following paragraphs provide a discussion of each of these scenarios upon which the discussions of direct and indirect impacts are based. Table 6.3.1.1-1 and Table 6.3.1.1-2 summarize the attributes of each of the land use scenarios.

Residential Development Land Use Scenario

Land use proposed under this scenario would develop the DOE LAAO Tract for multiple-family residential use. Land would be developed to accommodate apartments or condominiums at an average density of 20 dwelling units per acre with a population planning factor of 2.5 residents per dwelling. An estimated 9 to 10 acres (3 to 4 hectares) of the tract would be used for dwellings and accessory structures. The remaining acreage would be used for parking and open area landscaped to maintain the residential character of the development (see Figure 6.3.1.1-1). Access to the tract would

Table 6.3.1.1-1. Attributes of Future Land Use for the DOE LAAO Tract Under the Residential Development Scenario

RESIDENTIAL DEVELOPMENT
• The land use proposed would develop the site for multiple-family (very high density) residential use. • Existing office building and steam plant would be razed. • The development would be intended to accommodate apartments or condominiums at an average density of 20 dwelling units per acre with 2.5 residents per dwelling. • An estimated 9 to 10 acres (3 to 4 hectares) of the tract would be used for dwellings and accessory structures; the remaining acreage would be used for parking and open areas landscaped to maintain the residential character of the development. • When fully developed, there would be 200 new dwelling units, 500 new residents, and 420 personal vehicles.

Table 6.3.1.1-2. Attributes of Future Land Use for the DOE LAAO Tract Under the Commercial Development Scenario

COMMERCIAL DEVELOPMENT
• The land use proposed would utilize the DOE LAAO administrative building for commercial office space. • Total of 6 businesses and 15 commercial vehicles. • No additional development is contemplated.

remain unrestricted. The current DOE LAAO Building would be removed and activities and workers would be moved to another facility within LANL, most likely at TA 3.

6.3.1.2 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

Land use would change from professional offices to residential under the residential development scenario. Land use within the current footprint of the tract would be developed to reflect that of adjacent multiple-family residential land uses. There would be some land disturbance associated with the proposed use; however, development at the site is limited by topography. As such, any new development would to a large degree take place in previously disturbed areas.

Land use impacts associated with the development of the DOE LAAO Tract under this scenario would be minor. The transition from administrative to multiple-family residential land use would be consistent with land uses adjacent to the tract.

Commercial Development Land Use Scenario

There also would be little to no anticipated change in land use under the commercial development scenario. This proposal would largely result in the continuation of current land use at the site. As such, no adverse impacts to land use would be expected to occur.

6.3.1.3 Environmental Restoration

No additional restoration actions would be required under the Proposed Action Alternative because restoration activities must occur before that tract would be considered suitable for conveyance or transfer.

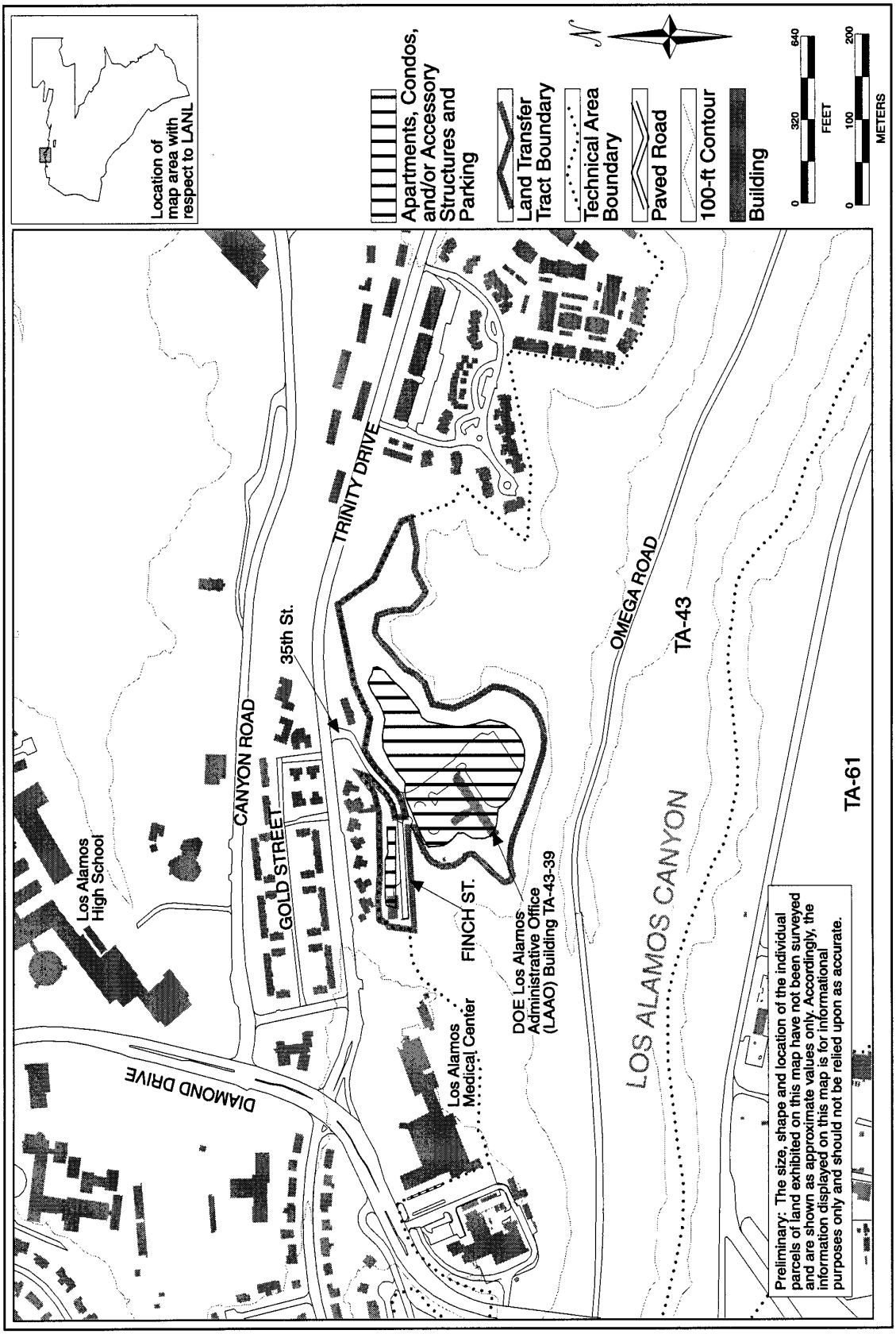

Figure 6.3.1.1-1. DOE Los Alamos Area Office Tract Contemplated Land Uses.

6.3.2 Transportation

Direct consequences of the transfer of this tract would include alteration of the daily commute for DOE and contractor personnel relocated from the DOE LAAO Building. Some DOE and contractor personnel would have a shorter drive to work, for example, those living in White Rock, but most would have farther to travel. Indirect consequences are discussed in the following sections.

6.3.2.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

The residential development land use scenario for this tract anticipates development of residential facilities. The Institute of Transportation Engineers (ITE) land use code 220 was utilized to estimate the trips generated by this proposed high-density residential development. High-density residential development is contemplated for 9 to 10 acres (3 to 4 hectares) of the site at a density of 20 dwelling units per acre. This would result in approximately 200 apartment units. Table 6.3.2.1-1 shows the number of trips the ITE Trip Generation Manual estimates would be generated by this development (ITE 1997).

As shown in Table 6.3.2.1-1, the proposed development could add an additional 86 trips to Trinity Drive in the weekday morning peak hour and add an additional 84 entering trips in the weekday evening peak hour. The residential land use scenario also could add 1,326 two-way trips per day on Trinity Drive. The number of trips anticipated is based on application of the ITE standard trip generation methodology. Local conditions in Los Alamos, such as the number of people employed at LANL, may affect the actual number of trips generated during peak hours.

Adding these new trips to those already existing on the transportation network would result in 27,900 trips per day on Trinity Drive. This would result in the LOS C on Trinity Drive, which is defined as good operating conditions with stable flow, but speeds and maneuverability are more closely controlled by the higher traffic volumes. This would be the same LOS predicted for the No Action Alternative. It is likely that the additional trips generated by this proposed development would not have a substantial impact on the operation of Trinity Drive.

Table 6.3.2.1-1. Estimated Increase in Traffic for the Residential Development Scenario

ITE TRAFFIC VOLUME ESTIMATES FOR DOE LAAO TRACT								
Land Use	ITE Land Use Code	24 Hour Two-Way Volume	Morning Peak Hour Trips		Evening Peak Hour Trips		Saturday Peak Hour Trips	
			Enter	Exit	Enter	Exit	Enter	Exit
Apartments – 200 Dwelling Units	220	1,326	16	86	84	40	0	0

Commercial Development Land Use Scenario

If the commercial development land use scenario is implemented, the impacts would be similar to those described for the affected environment (see Section 6.1.2) because the land use would not change substantially.

6.3.3 Infrastructure

As a direct result of conveyance or transfer of this tract, DOE LAAO personnel would be relocated to a different facility and would continue to have the same utility usage. Indirect consequences are discussed in the following sections.

6.3.3.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

The indirect environmental impacts with regard to utilities and infrastructure resulting from this alternative would fall into two categories: (1) increased utility usage and (2) ground disturbance resulting from construction of new facilities or modification of existing facilities. Table 6.3.3.1-1 shows the estimated increase in power, electricity, water and gas usage, and wastewater and solid waste production for the contemplated use as compared to the capacity for the existing utility systems. It is not anticipated that the increases in usage would exceed the existing capacity of any utility.

Development of this nature would require enhancement of existing infrastructure. Water, electricity, gas, and sewage lines would need to be extended to service new structures. New roads, parking areas, and structures would be developed. The construction of roads, parking areas and buildings, and extension of utility lines would cause soil disturbance. Refer to Section 6.3.9 of this chapter for details on impacts resulting from ground disturbance from new construction.

Commercial Development Land Use Scenario

The commercial development land use scenario envisions no further development, as described in Section 6.3.1.1 of this chapter. Commercial businesses would use the existing DOE LAAO Building as office space. The new businesses in the DOE LAAO Building would create additional utility usage, which is shown in Table 6.3.3.1-2. It is not anticipated that these increases would exceed the capacity for any utility in the region.

Table 6.3.3.1-1. Estimated Increase in Utility Usage for the Residential Development Land Use Scenario on the DOE LAAO Tract

	PEAK POWER mw	ELECTRICITY gwh	GAS mcf (mly)	WATER mgy (mly)	SEWAGE (BAYO) mgy (mly)	MSW tpy (mty)
Estimated annual increase	0.2	1.3	26 (736)	20 (76)	10 (38)	180 (163)
Available system capacity	5	277	5,040 (142,700)	297 (1,125)	135 (511)	NA

Notes: mw = megawatts, gwh = gigawatt-hours, mcf = million cubic feet, mgy = million gallons per year, mly = million liters per year, tpy = tons per year, msw = municipal solid waste, mty = metric tons per year

Table 6.3.3.1-2. Estimated Increase in Utility Usage for the Commercial Development Land Use Scenario on the DOE LAAO Tract

	PEAK POWER mw	ELECTRICITY gwh	GAS mcf (mly)	WATER mgy (mly)	SEWAGE (BAYO) mgy (mly)	MSW tpy (mty)
Estimated annual increase	0.05	0.3	3 (85)	3 (11)	1 (4)	7 (6)
Available system capacity	5	277	5,040 (142,700)	297 (1,125)	135 (511)	NA

Notes: mw = megawatts, gwh = gigawatt-hours, mcf = million cubic feet, mgy = million gallons per year, mly = million liters per year, tpy = tons per year, msw = municipal solid waste, mty = metric tons per year

Additionally, because the existing DOE LAAO Building would be used and no construction of new buildings or infrastructure is anticipated, there would be no soil disturbance under this land use scenario.

6.3.4 Noise

6.3.4.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

If the tract were developed residentially, there would be little change in noise levels, although the ambient noise would increase slightly. During the demolition of existing structures and construction of new residences, ambient noise would increase from about 40 to 50 dBA up to about 95 dBA. Residential use would result in ambient levels of about 60 to 70 dBA due to vehicular traffic and residential activities. Noise associated with vehicles likely would occur over longer periods of the day and consistently through the week. However, slow moving vehicles such as required in a dense residential area, are less intrusive than, for example, vehicles moving 40 to 60 miles (80 to 100 kilometers) per hour on a thoroughfare.

Commercial Development Land Use Scenario

If the tract were to remain in commercial use as an office building, then noise levels would remain as described in the No Action Alternative (that is, from 40 to 50 dBA). This noise level would be largely determined by background noises from traffic on nearby Trinity Drive and Los Alamos Canyon Bridge.

6.3.5 Visual Resources

6.3.5.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

No substantial impacts to visual resources would be expected under the residential development scenario. The developed portions of the site fall into Scenic Class IV. Scenic Class IV is considered to be of relatively low public value. The undeveloped portions of the site fall into Scenic Class III and are considered to be of moderate public value as a visual resource. The contemplated land use is residential development, which could be accomplished without substantial change to the visual character of the tract.

Commercial Development Land Use Scenario

There would be no impact to visual resources from this development scenario. The office building would remain, and no roads or other structures would be added.

6.3.6 Socioeconomics

There would be no direct socioeconomic impact from transfer of ownership of the DOE LAAO Tract. Employment of DOE and contractor personnel would continue in a different location. Indirect consequences are discussed in the following sections.

6.3.6.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

In the event of residential development, construction activities would temporarily increase employment in the ROI. This would, in turn, generate increases in ROI income. These changes would be temporary, lasting only the duration of the construction period. Because the majority of the jobs generated would be filled by the existing ROI labor force, there would be no impact on area population or increase in the demand for housing or public services in the ROI.

Commercial Development Land Use Scenario

If the site were developed for commercial or industrial uses, there would be possible short-term economic gains from minor construction, as well as long-term economic gains from the industries using the land. Based on the development assumptions described in Chapter 4 of this CT EIS, approximately 120 workers would be employed on the tract, and 200 jobs would be generated in the ROI. Because these jobs would be filled by the existing ROI labor force, there would be no impact on area population or increase in the demand for housing or public services in the ROI.

6.3.7 Ecological Resources

Direct impacts of the conveyance and transfer itself would be limited to the changes in responsibility for resource protection. Environmental review and protection processes for future activities would not be as rigorous as those which govern DOE activities. Indirect consequences are discussed in the following sections.

6.3.7.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

The development of the DOE LAAO Tract to high-density multiple-family residential use would impact the ecological resources on the tract and adjacent areas. Approximately 6.5 acres (2.6 hectares) of ponderosa pine forest would be lost as the area is converted to housing, roadways, and residential landscaping. Highly mobile wildlife species or wildlife species with large home ranges (such as deer, elk, and birds) would be able to relocate to adjacent undeveloped areas. However, successful relocation, primarily into Los Alamos Canyon (as all sides of the mesa location are surrounded by development), may not occur due to competition for resources to support the increased population and the carrying capacity limitations of areas outside the proposed development area. Species relocation may result in additional pressure to lands already at or near carrying capacity. The wildlife impacts could include stress and overwintering mortality. For less-mobile species (reptiles, amphibians, and small mammals), direct mortality could occur during the actual construction event or ultimately result from habitat alteration. Acreage used for the development also would be degraded as potential hunting habitat for

raptors and other predators. One little-addressed consequence of urban development is the influence of domestic animals upon wildlife populations. For example, free-roaming domestic cats may kill more than 100 animals each year. Studies have shown that approximately 60 percent of the wildlife cats kill are small mammals; 20 percent are birds (predation at bird feeders can be substantial; one Virginia study estimated 28 kills per urban cat per year); and 10 percent are amphibians, reptiles, and insects. Due to the presence of coyotes in the DOE LAAO area, predation by cats would tend to be limited to within developed and closely adjacent natural areas (Goldsmith et al. 1991, Crooks 1997-98, and CSBC 1998). Free-ranging domestic dogs are known to harass and disrupt the activities of many wildlife species and are documented to have caused mortality in animals such as deer and foxes (Goldsmith et al. 1991).

In addition to the area to be disturbed, there would be a slight decrease in quality of the Los Alamos Canyon habitat immediately adjacent to the proposed development due to increased noise level, traffic, lights, and other human activity, both pre- and post-construction. Given the limited acreage involved and existing developed nature of the site, impacts are expected to be small.

There are three species that are Federal-listed as threatened or endangered that may potentially use the DOE LAAO Tract: the bald eagle, American peregrine falcon, and the Mexican spotted owl. Loss of the entire tract as foraging habitat would decrease the total available habitat for these species by approximately 6.5 acres (2.6 hectares) or approximately 0.05 percent of the available foraging habitat on DOE property. With respect to the bald eagle, this area has a low level of potential foraging use. The Los Alamos Canyon AEI core habitat for the Mexican spotted owl would be reduced by approximately 6.5 acres (2.6 hectares). Pueblo Canyon AEI buffer habitat for the American peregrine falcon would be reduced by approximately 1.5 acres (0.6 hectares) (PC 1999d). Because direct entry into the adjacent Los Alamos Canyon habitat would require descending a steep cliff face, only limited increases in recreational use would be expected. Therefore, effects to the adjacent Los Alamos Canyon natural habitat would be minor.

Commercial Development Land Use Scenario

Impacts of the commercial development scenario would be similar to those of the No Action Alternative, with one basic exception. The environmental review and protection processes for future activities would not be as rigorous as those which govern the DOE.

6.3.8 Cultural Resources

Direct impacts of the conveyance and transfer itself would result from the transfer of known and unidentified cultural resources out of the responsibility and protection of the DOE.

First, under the Criteria of Adverse Effect (36 Code of Federal Regulations [CFR] 800.5(a)(1)), the transfer, lease, or sale of NRHP-eligible cultural resources out of Federal control is an adverse effect. Potentially eligible cultural resources are present in the DOE LAAO Tract, and thus, could be directly impacted by the Federal action.

Second, the conveyance and transfer of this tract could potentially impact the cultural resources by removing them from future consideration under the *National Historic Preservation Act*.

Third, the disposition of this tract may affect the protection and accessibility to Native American sacred sites and sites needed for the practice of any traditional religion by removing them from consideration under the *Religious Freedom Restoration Act, American*

Indian Religious Freedom Act, and Executive Order 13007, "Indian Sacred Sites." Finally, the disposition of this tract would affect the treatment and disposition of any human remains, funerary objects, sacred objects, and objects of cultural patrimony that may be discovered on the tract. This impact would result from removing these items from consideration under the *Native American Graves Protection and Repatriation Act*, or from changing the way this act is applied to these remains and objects. Indirect consequences are discussed in the following.

6.3.8.1 Environmental Consequences of the Contemplated Uses

Indirect impacts are anticipated from the land uses contemplated for the DOE LAAO Tract by the receiving parties. The two land uses identified for the tract include residential development and commercial development. This analysis reflects the broad, planning-level impacts anticipated from each contemplated use.

Residential Development Land Use Scenario

Under the residential development scenario, the tract would be extensively altered by construction activities, including demolition of buildings, grading, and trenching. Two buildings considered potentially eligible to the NRHP would be demolished. Activities also could result in primary impacts to other unidentified resources through physical destruction, damage, or alteration. Resources avoided by construction or on adjacent lands may be isolated or have their setting disturbed by the introduction of elements out of character with the resource, such as visual and audible intrusions.

The introduction of additional residents would increase access to cultural resources located within the tract and on adjacent LANL or privately held land. Increased access could cause possible destruction and damage to resources, vandalism, unauthorized collection of materials and artifacts, and disturbance of traditional practices and ceremonies.

Commercial Development Land Use Scenario

Impacts of the commercial development scenario would be similar to those of the No Action Alternative, with the exception that there would be no DOE responsibility for historic properties on the tract. The use of the DOE LAAO Building, a potentially eligible resource, would continue, and the building would not be demolished although modifications would be likely. Other unidentified or undetermined resources would be passively preserved.

6.3.9 Geology and Soils

6.3.9.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

One contemplated use is residential development. This use would require extensive ground disturbance to remove existing structures, install sufficient utilities to support housing, and complete redesign the tract's roadways. The actual area disturbed would be dependent on final configuration of planned housing but is estimated to be approximately 10 acres (4 hectares).

Commercial Development Land Use Scenario

Contemplated commercial development use includes continuation of office use but with different tract ownership. Consequences would be the same as for the No Action Alternative existing uses. The tract is already developed; no additional utilities, roadwork, or buildings would be required. No soil disturbance or change in availability of

resources would be anticipated. No impacts from this alternative would be expected.

6.3.10 Water Resources

6.3.10.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

If the residential development land use scenario is pursued, surface water quality outside of the tract boundary in Los Alamos Canyon may be indirectly affected by increased sediment load in stormwater runoff from the tract during and after construction. Residential development would not affect groundwater quality or quantity beneath the tract but may contribute to the overall regional water level decline and possibly result in degradation of water quality within the aquifer.

Commercial Development Land Use Scenario

The impacts from the commercial development of this tract would be the same as those discussed for the affected environment (Section 6.1.10). The office building would remain, and no roads or other structures would be added.

6.3.11 Air Resources

Direct consequences of the transfer of this tract would include alteration of the daily commute for DOE and contractor personnel relocated from the DOE LAAO Building. Some DOE and contractor personnel would have a shorter drive to work, for example, those living in White Rock, but most would have farther to travel. This would result in slightly greater emissions than those discussed in the No Action Alternative. Indirect consequences are discussed in the following sections.

6.3.11.1 Environmental Consequences of the Contemplated Uses

Residential Development Land Use Scenario

If the DOE LAAO Tract were developed residentially, then additional criteria pollutants, primarily trace amounts of carbon monoxide and ozone, would be emitted from residents' motor vehicles. These emissions would be slightly greater than in the No Action Alternative because more people would occupy the tract and because vehicular activity would be present in evenings and on weekends. There would be no noticeable effect, however, on pollutant concentrations, and ambient air standards would continue to be met.

There would be no emissions of hazardous or other chemical air pollutants or radioactive air pollutants in the case of residential development. Concentrations of these pollutants would thus remain as in the No Action Alternative. Specifically, chemical exposures would remain below health-based standards, and maximum dose from the inhalation of radioactive air pollutants would be approximately 2.0 millirem per year.

Commercial Development Land Use Scenario

Consequences to air quality of commercial development of the DOE LAAO Tract would be almost identical to the No Action Alternative. Air quality would remain within standards for criteria pollutants, for hazardous and other chemical air pollutants, and for radioactive air pollutants.

6.3.11.2 Global Climate Change

Residential Development Land Use Scenario

Under the contemplated residential development land use scenario, about 200 housing units, occupied by about 500 new residents would be constructed. Space and

water heating requirements, and use of an estimated 420 personal vehicles, would lead to a 25-fold increase in emissions of carbon dioxide, to an estimated 3,300 tons (3,000 metric tons) per year.

Commercial Development Land Use Scenario

Under the commercial development land use scenario, emissions of carbon dioxide would remain at an estimated 130 tons (120 metric tons) per year, the same as in the No Action Alternative.

6.3.12 Human Health

6.3.12.1 Environmental Consequences of the Contemplated Uses

Consequences would be the same for either land use scenario as in the No Action Alternative. Radiation doses received by residents at this tract would be an estimated 2.0 millirem per year (DOE 1999c, Chapter 5).

No changes in cancer risk should be expected. Nonradiological exposures would be expected to be below health-based standards. Residents would face the same hazards to floods and wildfires as workers now do, and should have adequate time to evacuate premises. Seismic events come without warning and would carry risks of physical injury from building collapses.

Residential development would bring 500 new residents into closer proximity to LANL facilities, thereby increasing the number of members of the public exposed to radiological and chemical air pollutants emitted by LANL operations. Residential development also would introduce more sensitive receptors, such as children and pregnant females, to an area that currently hosts only LANL-related workers. While all doses would be within health-based standards established by other Federal agencies, the closer proximity would increase the radiation dose received by the collective population within a 50-mile (80-kilometer) radius of LANL. In addition, closer public proximity would result in greater public consequences from some hypothetical accidents at LANL facilities. These same human health consequences would result from commercial development of the DOE LAAO Tract, but are lessened by three factors: (1) fewer members of the public would use the tract (an estimated 120 workers); (2) workers would be present less often than residents; (3) and the work force would contain fewer sensitive receptors.

6.3.12.2 Chemical Accidents

Accident assessment estimates greater public consequences than estimated in the No Action Alternative. For 15 of the 16 accident scenarios postulated in the LANL SWEIS, chemical concentrations in the air plume released by potential chemical accidents would be below both ERPG-3 (life-threatening) and ERPG-2 (serious health effects) by the time air plume reached the DOE LAAO Tract, even under adverse weather dispersion conditions. ERPG-2 concentrations would reach the tract under the 16th scenario, however, and would affect residents.

The lone scenario in which the chemical plume would reach the DOE LAAO Tract is the hypothetical rupture of a chlorine cylinder during adverse weather dispersion conditions at the chlorinating station along Diamond Drive in the Los Alamos townsite (Building 00-1109). Under this scenario, ERPG-3 concentrations would be estimated to extend a distance of 1,345 feet (410 meters), and ERPG-2 concentrations a distance of 4,789 feet (1,460 meters). The DOE LAAO Tract is 3,280 feet (1,000 meters) from the accident location and occupants would thus experience ERPG-2 concentrations. In the Proposed Action Alternative, the tract is either developed residentially (200 apartments) or retained for commercial use of

the office building. If developed residentially, an estimated 360 members of the public would be exposed to ERPG-2 concentrations. If developed commercially, an estimated 50 members of the public would be exposed to ERPG-2 concentrations at the tract. These exposures would be in addition to the 226 public exposures to ERPG-2 concentrations and the 180 public exposures to ERPG-3 concentrations, as estimated in the LANL SWEIS (DOE 1999c).

6.3.12.3 Radiological Accidents

Regardless of land use subsequent to disposition, the MEI dose at this tract would be the same as described in the No Action Alternative. MEI doses would be greater than 300 millirem for 3 of 13 scenarios: 97 rem for RAD-02 (natural gas pipeline failure, explosion, and fire at the CMR Building), 17 rem for RAD-12 (plutonium release from the Dual Axis Radiographic Hydrodynamic Test [DARHT] Facility during an earthquake), and 5 rem for RAD-15B (explosion followed by fire in an entire wing of the CMR Building).

Commercial use of the existing building for offices has been contemplated as a possible land use subsequent to transfer of ownership. Under this scenario, estimated tract collective dose and estimated excess LCFs also would remain the same as in the No Action Alternative, with one difference—the receptors of these doses would be members of the public not DOE employees. If the tract was developed residentially, collective tract dose and excess LCFs would increase from those estimated for the commercial development scenario because the tract would have a higher population density (approximately 500 residents versus 120 workers). A comparison of the estimated additional consequences associated with hypothetical radiological accidents for each land use scenario is presented in Table 6.3.12.3-1.

6.3.12.4 Natural Event Accidents

The postulated wildfire accident scenario would have no estimated chemical consequences at the DOE LAAO Tract. Earthquakes would have consequences, however. If developed residentially, an estimated 360 members of the public would be exposed to ERPG-2 concentrations. If developed commercially, an estimated 50 members of the public would be exposed to ERPG-2 concentrations at the tract. These exposures would be in addition to the 226 public exposures to ERPG-2 concentrations, and the 180 public exposures to ERPG-3 concentrations, as estimated in the LANL SWEIS (DOE 1999c).

MEI doses would be the same as in the No Action Alternative, regardless of land use subsequent to disposition. The maximum dose resulting from the postulated wildfire would be less than 0.1 rem; that from the most severe earthquake, however, would approach 300 rem.

If the tract were developed commercially subsequent to disposition, exposures would remain as in the No Action Alternative (as many as five excess LCFs), with one difference. The difference would lie in the receptors of these doses. In the No Action Alternative, all doses would be to DOE employees. If the tract is transferred, all doses would be to members of the public.

If the tract were developed residentially, however, there would be significant increases in collective tract dose and excess LCFs. The most severe earthquake would result in estimated tract collective doses greater than 100,000 person-rem and in more than 40 excess LCFs. These exposures would be in addition to those estimated in the LANL SWEIS (340,000 person-rem and 230 excess LCFs for SITE-03B).

Table 6.3.12.3-1. Additional Accident Consequences Associated with Contemplated Land Uses on the DOE LAAO Tract

				COMMERCIAL DEVELOPMENT[a]		RESIDENTIAL DEVELOPMENT[a]		SWEIS ESTIMATES[b]	
Accident Scenario	Accident Location	Facility	Frequency per Year	Collective Dose[c]	Excess LCF	Collective Dose[c]	Excess LCF	Collective Dose[c]	Excess LCF
RAD-01	54-38	RANT	1.6×10^{-3}	2	0	14	0.01	72	0.04
RAD-02	03-29	CMR	1.5×10^{-6}	4,300	2.2	31,000	16	120,000	57
RAD-03	18-116	Kiva #3	4.3×10^{-6}	1	0	9	0.01	100	0.06
RAD-05	21-209	TSTA	9.1×10^{-6}	0	0	0	0	24	0.01
RAD-07	50-69	WCRR	3.0×10^{-4}	10	0.01	73	0.04	1,300	0.69
RAD-08	54-230	TWISP	4.3×10^{-6}	2	0	16	0.01	400	0.2
RAD-09A	54-226	TWISP	4.9×10^{-1}	0	0	0	0	4	0
RAD-09B	54-226	TWISP	4.9×10^{-3}	1	0	10	0.01	230	0.12
RAD-12	16-411	--	1.5×10^{-6}	810	0.4	5,800	2.9	35,800	18
RAD-13	18-116	Kiva #3	1.6×10^{-5}	2	0	14	0.01	160	0.08
RAD-15A	03-29	CMR	3.6×10^{-5}	12	0.01	87	0.04	175	0.09
RAD-15B	03-29	CMR	3.2×10^{-5}	240	0.12	1,700	0.85	3,400	1.7
RAD-16	03-29	CMR	3.5×10^{-6}	1	0	5	0	56	0.03

Notes: RANT = Radioactive Assay Nondestructive Test; TSTA = Tritium Science Test Assembly; WCRR = Waste Characterization, Reduction, and Repackaging; TWISP = Transuranic Waste Inspectable Storage Project

[a] In addition to doses estimated in the SWEIS.

[b] For the entire population within a 50-mile (80-kilometer) radius of LANL.

[c] Person-rem

6.3.13 Environmental Justice

For environmental justice impacts to occur, there must be high and adverse human health or environmental impacts that disproportionately affect minority or low-income populations. The human health analyses for the contemplated land uses estimate that air emissions and hazardous chemical and radiological releases associated with LANL operations would be within current regulatory limits and that no excess LCFs would likely result. The human health analyses also indicate that radiological releases from accidents would not result in disproportionate adverse human health or environmental impacts. Therefore, such accidents would not have disproportionately high and adverse impacts on minority or low-income populations.

The analyses also indicate that socioeconomic changes resulting from implementing any of the proposed alternatives would not lead to environmental justice impacts. Under the Proposed Action Alternative, modest economic benefits would arise from the additional jobs created during construction and operation of the new facility. Secondary effects would include small increases in business activity and would likely increase revenues to local governments. Each of these impacts would be positive and would not disproportionately affect low-income or minority populations.

The analysis of impacts to cultural resources indicates that TCPs could be present on the tract or in adjacent areas. If present, TCPs could be impacted by the conveyance or transfer or by subsequent land uses. Consultations to determine the presence of these resources have not been completed, and the degree to which these resources may be impacted has not been ascertained. Impacts to TCPs potentially may cause disproportionately high or adverse effects on minority or low-income communities, but these effects cannot be determined at this point in the consultation process.

6.3.14 Irreversible and Irretrievable Commitment of Resources

This section describes the major irreversible and irretrievable commitments of resources that can be identified at the level of analysis conducted for this CT EIS. A commitment of resources is irreversible when its primary or secondary impacts limit the future options for a resource. An irretrievable commitment refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations.

The actual conveyance or transfer of the DOE LAAO Tract would not immediately cause any irreversible or irretrievable commitments of resources. In addition, because this tract is already developed, no significant irreversible commitments of ecological habitat or cultural resources would occur under either the residential or commercial land use scenarios.

Residential development would cause the irretrievable commitment of resources during construction and subsequent use of 200 new apartments. Energy would be expended in the form of natural gas and electricity. Additional water also would be consumed. Construction of these buildings would require the irretrievable commitment of standard building materials such as lumber and roofing materials.

6.3.15 Unavoidable Adverse Environmental Impacts

The actual conveyance or transfer of the DOE LAAO Tract could result in the loss of certain Federal protections for cultural resources on the tract. Loss of these protections could be considered an unavoidable adverse impact to these resources because new development could result in physical destruction, damage, or alteration of cultural resources. The conveyance or transfer

of the tract could also result in the loss of certain Federal protections for ecological resources and consideration of these resources in planning future activities on the tract.

Subsequent commercial development of the tract would have no adverse environmental impacts at the tract itself because its current land use is similar to a commercial use. There would be small impacts within the County. There would be minor transportation impacts, for example, because current DOE and contractor personnel would likely have slightly longer commutes to work.

Subsequent residential development also would cause unavoidable adverse impacts in several resource areas. There would be increased demands for utilities, for example. Increased demand for water, solid waste, and sewage would have adverse effects in the immediate Los Alamos region by lowering the aquifer level more quickly, shortening the remaining lifetime of the County landfill, and increasing both the quantities of sewage that require treatment and the quantities of treated sewage discharged to the environment. The environmental effects of increased demand for electricity and natural gas would be felt elsewhere (in the Four Corners region, for example), in the form of increased emissions of air pollutants in order to generate electricity. Increased consumption of natural gas adds to global climate change through increased emissions of carbon dioxide.

Residential development also would lead to an estimated 3 percent increase in personal vehicles in Los Alamos County, with attendant slight increases in congestion and traffic noises. Noise levels would increase within the DOE LAAO Tract, in frequency of occurrence and duration (into the night). The visual environment would deteriorate within the tract itself, but would not affect other areas.

Finally, residential development would bring 500 new residents into closer proximity to LANL facilities, thereby increasing the number of members of the public exposed to radiological and chemical air pollutants emitted by LANL operations. While all doses would be within health-based standards established by other Federal agencies, the closer proximity would slightly increase the radiation dose received by the collective population within a 50-mile (80-kilometer) radius of LANL. In addition, closer public proximity would result in greater public consequences from some hypothetical accidents at LANL facilities.

6.3.16 Relationship Between Local Short-Term Use of the Environment and Maintenance of Long-Term Productivity

The actual conveyance or transfer of the DOE LAAO Tract would not immediately cause any specific impacts on short-term uses of the environment. The tract is located within the Los Alamos townsite, is relatively small, and is surrounded by already-developed areas. Subsequent development, whether commercial or residential, would therefore be compatible with the long-term uses of the land.